UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
GILLIS, BRIAN J

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/656,096	IDEI ET AL.
	Examiner	Art Unit	
	Brian J. Gillis	2141	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 June 2007</u>.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1,2,4-8,10-14 and 16-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,2,4-8,10-14 and 16-20</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on <u>05 September 2003 and 18 August 2006</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☒ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an

application filed in Japan on July 11, 2003. It is noted, however, that applicant has not

filed a certified copy of the 2003-195451 application as required by 35 U.S.C. 119(b).

Claim Objections

Claim 19 is objected to because of the following informalities: The claim recites

the limitation "wherein said <u>storage pool management</u> program has at least an

unassigned block list and information on a number of unassigned blocks". The

underlined text was previously amended in the response filed January 22, 2007.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4, 7, 8, 10, 13, 14, and 16 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Shillo (US PGPUB US2003/0110263) in view of Naik et al (US

PGPUB US2004/0205206) in view of Huntington et al (US PGPUB US2003/0131098).

Claim 1 discloses a management server connected to a plurality of servers to

manage storage areas includes in storage apparatuses as virtual storage areas;

wherein said storage apparatuses are shared by said plurality of servers; said storage

apparatuses include assignment areas which are storage areas assigned to at least one

of said plurality of servers; data stored in said assignment areas of said storage

apparatuses includes high-priority data having high priority and low-priority data having

low priority; said management server judges whether data to be written in said storage

apparatuses is the high-priority data of the low priority data on the basis of a write

request of data from one of said plurality of servers and keeps a judgment result and

position information of storage areas in which said data is written; and said

management server being responsive to an area assignment instruction of storage

areas exceeding unassigned areas received from one of said plurality of servers to

release at least part of said assignment areas of other servers as unassigned areas and

assign released areas to one of said plurality of servers, wherein upon receiving an area

assignment instruction, the management server judges whether (i) a size of the

unassigned areas exceeds a size of the storage areas specified by said area

assignment instruction, (ii) a total size of the unassigned areas and unused areas

exceeds the size of the storage areas specified by said area assignment instruction, or

(iii) a total size of the unassigned areas, the unused areas and storage areas having

stored low-priority data exceeds the size of the storage areas specified by said area

assignment instruction, and when the condition (iii) is met, said management server

releases at least part of storage areas in which the low-priority data is stored, of the

assignment areas of other servers as unassigned areas and assigns at least areas to

one of said plurality of servers. Shillo teaches storage areas are shared by multiple

servers (paragraph 41), the virtual storage pool made by the grouping of the storage

resources knows how much space each application is allocated in the pool (paragraph

42), and a re-allocation process takes place to re-allocate unused resources which are

assigned to applications (paragraph 43). It fails to teach data stored in said assignment

areas of said storage apparatuses includes high-priority data having high priority and

low-priority data having low priority, the server judges whether data to be written in said

storage apparatuses is the high-priority data or the low-priority data on the basis of a

write request of data from one of said plurality of servers and keeps a judgment result

and position information of storage areas in which said data is written, and wherein

upon receiving an area assignment instruction, the management server judges whether

(i) a size of the unassigned areas exceeds a size of the storage areas specified by said

area assignment instruction, (ii) a total size of the unassigned areas and unused areas

exceeds the size of the storage areas specified by said area assignment instruction, or

(iii) a total size of the unassigned areas, the unused areas and storage areas having

stored low-priority data exceeds the size of the storage areas specified by said area

assignment instruction, and when the condition (iii) is met, said management server

releases at least part of storage areas in which the low-priority data is stored, of the

assignment areas of other servers as unassigned areas and assigns at least areas to

one of said plurality of servers. Naik et al teaches a server assigns priority based on the

user who issued the request and keeps information on the mapping (paragraphs 63, 64,

and 69).

Shillo and Naik et al are analogous art because they are both related to

managing storage on a network.

At the time of the invention it would have been obvious to a person of ordinary

skill in the art to use the priority flagging and judging in Naik et al with the system in

Shillo because inefficient use of available resources and high costs are avoided (Naik,

paragraph 71).

Shillo in view of Naik et al teaches the limitations as recited above. It fails to

teach upon receiving an area assignment instruction, the management server judges

whether (i) a size of the unassigned areas exceeds a size of the storage areas specified

by said area assignment instruction, (ii) a total size of the unassigned areas and unused

areas exceeds the size of the storage areas specified by said area assignment

instruction, or (iii) a total size of the unassigned areas, the unused areas and storage

areas having stored low-priority data exceeds the size of the storage areas specified by

said area assignment instruction, and when the condition (iii) is met, said management

server releases at least part of storage areas in which the low-priority data is stored, of

the assignment areas of other servers as unassigned areas and assigns at least areas

to one of said plurality of servers. Huntington et al teaches data is distinguished by

priority (paragraph 62) and if free space is needed for a request for storage the server

may recycle sections that have low priority data within (figure 5, paragraphs 62, 63, and

69).

Shillo in view of Naik et al and Huntington et al are analogous art because they

are both related to managing network storage resources.

At the time of the invention it would have been obvious to a person of ordinary

skill in the art to use the recycling of low priority data storage in Huntington et al with the

system in Shillo in view of Naik et al because large numbers of packets may be

communicated and stored on a network with minimal user intervention (Huntington,

paragraph 5).

Claim 2 discloses a management server according to claim 1, wherein said

assignment areas of said storage apparatuses include used areas and unused areas;

and said management server includes information for identifying said used areas and

said unused areas of said assignment areas; said management server being responsive

to an area assignment instruction of storage areas exceeding the unassigned areas

received from one of said plurality of servers to release at least part of said unused

areas of said assignment areas of other servers on the basis of said identification

information as unassigned areas and assign released areas to one of said plurality of

servers. Shillo further teaches the virtual storage pool has used and unused areas

(paragraph 43), a server can detect how much allocated space each application actually

uses (paragraph 42), and the managing server reallocates the unused portion of the

allocated space (paragraph 43).

Claim 4 discloses a management server according to claim 2, wherein data

stored in the used areas in said assignment areas of said storage apparatuses includes

high-priority data having high priority and low-priority data having low priority; and said

management server judges whether data to be written in said storage apparatuses is

the high-priority data or the low-priority data on the basis of a write request of data from

said server and keeps judgment result and position information of storage areas in

which said data is written; said management server being responsive to an area

assignment instruction of storage areas exceeding the unassigned areas received from

one of said plurality of servers to release at least part of unused areas and at least part

of areas in which the low-priority data is stored, of the assignment areas of other

servers as unassigned areas and assign released areas to one of said plurality of

servers. Shillo further teaches data stored in assigned areas of devices, and

reallocating unused resources already allocated (paragraphs 42 and 43). Huntington et

al further teaches data is distinguished by priority (paragraph 62) and if free space is

needed for a request for storage the server may recycle sections that have low priority

data within (figure 5, paragraphs 62, 63, and 69).

Claim 7 discloses a storage apparatus system comprising: a storage

apparatuses; and a management server connected to a plurality of servers and said

storage apparatuses; said management server managing storage areas of said storage

apparatuses as virtual storage areas; said storage apparatuses being shared by said

plurality of servers; said storage apparatuses including assignment areas which are storage areas assigned to at least one of said plurality of servers; data stored in said assignment areas of said storage apparatuses includes high-priority data having high priority and low-priority data having low priority; said management server judges whether data to be written in said storage apparatuses is the high-priority data or the low-priority data on the basis of a write request of data from one of said plurality of servers and keeps judgment result and position information of storage areas in which said data is written; said management server being responsive to an area assignment instruction of storage areas exceeding unassigned areas received from one of said plurality of servers to release at least one of assignment areas of other servers as unassigned area and assign released areas to one of said plurality of servers, wherein upon receiving an area assignment instruction, the management server judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area assignment instruction, (ii) a total size of the unassigned areas and unused areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when condition (iii) is met, said management server releases at least part of storage areas in which low-priority data is stored, or the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers. Shillo teaches a managing server and multiple storage devices (paragraphs 41 and 42), the managing server manages a virtual storage pool

which is a collection of all the storage resources available (paragraph 42), storage areas

are shared by multiple servers (paragraph 41), the virtual storage pool made by the

grouping of the storage resources knows how much space each application is allocated

in the pool (paragraph 42), and a re-allocation process takes place to re-allocate

unused resources which are assigned to applications (paragraph 43). It fails to teach of

data stored in said assignment areas of said storage apparatuses includes high-priority

data having high priority and low-priority data having low priority, the server judges

whether data to be written in said storage apparatuses is the high-priority data or the

low-priority data on the basis of a write request of data from one of said plurality of

servers and keeps a judgment result and position information of storage areas in which

said data is written, and wherein upon receiving an area assignment instruction, the

management server judges whether (i) a size of the unassigned areas exceeds a size of

the storage areas specified by said area assignment instruction, (ii) a total size of the

unassigned areas and unused areas exceeds the size of the storage areas specified by

said area assignment instruction, or (iii) a total size of the unassigned areas, the unused

areas and storage areas having stored low-priority data exceeds the size of the storage

areas specified by said area assignment instruction, and when the condition (iii) is met,

said management server releases at least part of storage areas in which the low-priority

data is stored, of the assignment areas of other servers as unassigned areas and

assigns at least areas to one of said plurality of servers. Naik et al teaches a server

assigns priority based on the user who issued the request and keeps information on the

mapping (paragraphs 63, 64, and 69).

Shillo and Naik et al are analogous art because they are both related to managing storage on a network.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the priority flagging and judging in Naik et al with the system in Shillo because inefficient use of available resources and high costs are avoided (Naik, paragraph 71).

Shillo in view of Naik et al teaches the limitations as recited above. It fails to teach upon receiving an area assignment instruction, the management server judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area assignment instruction, (ii) a total size of the unassigned areas and unused areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when the condition (iii) is met, said management server releases at least part of storage areas in which the low-priority data is stored, of the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers. Huntington et al teaches data is distinguished by priority (paragraph 62) and if free space is needed for a request for storage the server may recycle sections that have low priority data within (figure 5, paragraphs 62, 63, and 69).

Shillo in view of Naik et al and Huntington et al are analogous art because they are both related to managing network storage resources.

At the time of the invention it would have been obvious to a person of ordinary

skill in the art to use the recycling of low priority data storage in Huntington et al with the

system in Shillo in view of Naik et al because large numbers of packets may be

communicated and stored on a network with minimal user intervention (Huntington,

paragraph 5).

Claim 8 discloses a storage apparatus system according to claim 7, wherein said

assignment areas of said storage apparatuses include used areas and unused areas;

and said management server includes information for identifying said used areas and

said unused areas of said assignment areas; said management server being responsive

to an area assignment instruction of storage areas exceeding the unassigned areas

received from one of said plurality of servers to release at least part of said unused

areas of other servers on the basis of said identification information as unassigned

areas and assign released areas to one of said plurality of servers. Shillo further

teaches the virtual storage pool has used and unused areas (paragraph 43), a server

can detect how much allocated space each application actually uses (paragraph 42),

and the managing server reallocates the unused portion of the allocated space

(paragraph 43).

Claim 10 discloses a storage apparatus system according to claim 8, wherein

data stored in said used areas of said storage apparatuses includes high-priority data

having high priority and low-priority data having low priority; and said management

server judges whether data to be written in said storage apparatuses is the high-priority

data or the low-priority data on the basis of a write request of data from one of said

plurality of servers and keeps judgment result and position information of storage areas

in which said data is written; said management server being responsive to an area

assignment instruction of storage areas exceeding the unassigned areas received from

one of said plurality of servers to release at least part of said unused areas and at least

part of areas in which the low-priority data is stored, of the assignment areas of other

servers as unassigned areas and assign the areas to one of said plurality of servers.

Shillo further teaches data stored in assigned areas of devices, and reallocating unused

resources already allocated (paragraphs 42 and 43). Huntington et al further teaches

data is distinguished by priority (paragraph 62) and if free space is needed for a request

for storage the server may recycle sections that have low priority data within (figure 5,

paragraphs 62, 63, and 69).

Claim 13 discloses a computer program product for a management server which

manages storage areas included in storage apparatuses as virtual storage areas,

wherein said management server is connected to a plurality of servers; and said storage

apparatuses are shared by said plurality of servers through said management server

and include assignment areas which are storage areas assigned to at least one of said

plurality of servers, wherein data stored in said assignment areas of said storage

apparatuses include high-priority data having high priority and low-priority data having

low priority; said computer program product comprising: a code for judging on the basis

of a write request of data from one of said plurality of servers whether data to be written

in said storage apparatuses is said high-priority data or said low-priority data; and a

code for information indicative of judgment result and position of storage areas in which

said data is written; and code for being responsive to an area assignment instruction of

storage areas exceeding unassigned areas received from one of said plurality of

servers to release at least part of assignment areas of other servers as unassigned

areas and assign released area to one of said plurality of servers, wherein upon

receiving an area assignment instruction, the code for being responsive to an area

assignment instruction judges whether (i) a size of the unassigned areas exceeds a size

of the storage areas specified by said area assignment instruction, (ii) a total size of the

unassigned areas and unused areas exceeds the size of the storage areas specified by

said area assignment instruction, or (iii) a total size of the unassigned areas, the unused

areas and storage areas having stored low-priority data exceeds the size of the storage

areas specified by said area assignment instruction, and when the condition (iii) is met,

said management server releases at least part of storage areas in which the low-priority

data is stored, of the assignment areas of other servers as unassigned areas and

assigns at least areas to one of said plurality of servers; and a computer readable

storage medium for storing said code. Shillo teaches a re-allocation process takes

place to re-allocate unused resources which are assigned to applications (paragraph

43), and a computer program product on a computer-readable medium (page 6 #14). It

fails to teach of data stored in said assignment areas of said storage apparatuses

includes high-priority data having high priority and low-priority data having low priority,

the server judges whether data to be written in said storage apparatuses is the high-

priority data or the low-priority data on the basis of a write request of data from one of

said plurality of servers and keeps a judgment result and position information of storage

areas in which said data is written, and wherein upon receiving an area assignment instruction, the management server judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area assignment instruction, (ii) a total size of the unassigned areas and unused areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when the condition (iii) is met, said management server releases at least part of storage areas in which the low-priority data is stored, of the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers. Naik et al teaches a server assigns priority based on the user who issued the request and keeps information on the mapping (paragraphs 63, 64, and 69).

Shillo and Naik et al are analogous art because they are both related to managing storage on a network.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the priority flagging and judging in Naik et al with the system in Shillo because inefficient use of available resources and high costs are avoided (Naik, paragraph 71).

Shillo in view of Naik et al teaches the limitations as recited above. It fails to teach upon receiving an area assignment instruction, the management server judges whether (i) a size of the unassigned areas exceeds a size of the storage areas specified by said area assignment instruction, (ii) a total size of the unassigned areas and unused

areas exceeds the size of the storage areas specified by said area assignment instruction, or (iii) a total size of the unassigned areas, the unused areas and storage areas having stored low-priority data exceeds the size of the storage areas specified by said area assignment instruction, and when the condition (iii) is met, said management server releases at least part of storage areas in which the low-priority data is stored, of the assignment areas of other servers as unassigned areas and assigns at least areas to one of said plurality of servers. Huntington et al teaches data is distinguished by priority (paragraph 62) and if free space is needed for a request for storage the server may recycle sections that have low priority data within (figure 5, paragraphs 62, 63, and 69).

Shillo in view of Naik et al and Huntington et al are analogous art because they are both related to managing network storage resources.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the recycling of low priority data storage in Huntington et al with the system in Shillo in view of Naik et al because large numbers of packets may be communicated and stored on a network with minimal user intervention (Huntington, paragraph 5).

Claim 14 discloses a computer program product according to claim 13, wherein said assignment areas of said storage apparatuses include used areas and unused areas; and said computer program product further comprising: code for information for identifying said used areas and said unused areas of said assignment areas; said code for releasing at least part of assignment areas of other servers as unassigned areas

including code for being responsive to the area assignment instruction of storage areas

exceeding unassigned areas received from one of said plurality of servers to release at

least part of said unused areas of other servers as unassigned areas on the basis of

said identification information. Shillo further teaches the virtual storage pool has used

and unused areas (paragraph 43), a server can detect how much allocated space each

application actually uses (paragraph 42), and the managing server reallocates the

unused portion of the allocated space (paragraph 43).

Claim 16 discloses a computer program product according to claim 14, wherein

data stored in said used areas of said storage apparatuses include high-priority data

having high priority and low-priority data having low priority; and said computer program

product further comprising: code for judging on the basis of a write request of data from

one of said plurality of servers whether data to be written in said storage apparatuses is

said high-priority data or said low-priority data; and code for information indicative of

judgment result and position of storage areas in which said data is written; said code for

releasing at least part of unused areas of assignment areas of other servers as

unassigned areas including code for being responsive to the area assignment

instruction of storage areas exceeding the unassigned areas received from one of said

plurality of servers to release at least part of said unused areas and at least part of

areas in which said low-priority data is stored, of the assignment areas of other servers

as unassigned areas. Shillo further teaches data stored in assigned areas of devices,

and reallocating unused resources already allocated (paragraphs 42 and 43).

Huntington et al further teaches data is distinguished by priority (paragraph 62) and if

free space is needed for a request for storage the server may recycle sections that have

low priority data within (figure 5, paragraphs 62, 63, and 69).

Claims 5, 6, 11, 12, 17, and 18 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Shillo (US PGPUB US2003/0110263) in view of Naik et al (US

PGPUB US2004/0205206) in view of Huntington et al (US PGPUB US2003/0131098)

as applied to claims 1, 7, and 13 above, and further in view of Karpoff (US PGPUB

US2003/0135385).

Claim 5 discloses a management server according to claim 1, wherein said

management server makes billing processing for each of said plurality of servers

utilizing said storage apparatuses at predetermined intervals. Shillo in view of Naik et al

in view of Huntington et al teaches the limitations of claim 1 as recited above. It fails to

teach of billing each server for the space used at predetermined intervals. Karpoff

teaches billing customers based on usage following revenue models similar to the

telephone industry, which is widely known to bill a customer on a monthly basis

(paragraphs 115 and 116).

Shillo in view of Naik et al in view of Huntington et al and Karpoff are analogous

art because they are both related to managing storage usage over a network.

At the time of the invention it would have been obvious to a person of ordinary

skill in the art to use the billing engine in Karpoff with the system in Shillo in view of Naik

et al in view of Huntington et al because a storage service provider is able to charge

customers accordingly for standard and convenient features (Karpoff, paragraph 110).

Claim 6 discloses a management server according to claim 5, wherein said management server establishes different billing amounts depending on where low-priority data is stored and high-priority data is stored. Karpoff further teaches billing a customer premiums based on fast access (high priority) or archival (low priority) (paragraphs 99 and 106).

Claim 11 discloses a storage apparatus system according to claim 7, wherein said management server makes billing processing for each of said plurality of servers utilizing said storage apparatuses at predetermined intervals. Shillo in view of Naik et al in view of Huntington et al teaches the limitations of claim 7 as recited above. It fails to teach of billing each server for the space used at predetermined intervals. Karpoff teaches billing customers based on usage following revenue models similar to the telephone industry, which is widely known to bill a customer on a monthly basis (paragraphs 115 and 116).

Shillo in view of Naik et al in view of Huntington et al and Karpoff are analogous art because they are both related to managing storage usage over a network.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the billing engine in Karpoff with the system in Shillo in view of Naik et al in view of Huntington et al because a storage service provider is able to charge customers accordingly for standard and convenient features (Karpoff, paragraph 110).

Claim 12 discloses a storage apparatus system according to claim 11, wherein said management server establishes different billing amounts depending on where low-priority data is stored and high-priority data is stored. Karpoff further teaches billing a

customer premiums based on fast access (high priority) or archival (low priority) (paragraphs 99 and 106).

Claim 17 discloses a computer program product according to claim 13, further comprising: code for causing said management server to execute billing processing for each of said plurality of servers utilizing said storage apparatuses at predetermined intervals. Shillo in view of Naik et al in view of Huntington et al teaches the limitations of claim 13 as recited above. It fails to teach of billing each server for the space used at predetermined intervals. Karpoff teaches billing customers based on usage following revenue models similar to the telephone industry, which is widely known to bill a customer on a monthly basis (paragraphs 115 and 116).

Shillo in view of Naik et al in view of Huntington et al and Karpoff are analogous art because they are both related to managing storage usage over a network.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the billing engine in Karpoff with the system in Shillo in view of Naik et al in view of Huntington et al because a storage service provider is able to charge customers accordingly for standard and convenient features (Karpoff, paragraph 110).

Claim 18 discloses a computer program product according to claim 17, further comprising: code for establishing different billing amounts depending on the cases where low-priority data is stored and high-priority data is stored. Karpoff further teaches billing a customer premiums based on fast access (high priority) or archival (low priority) (paragraphs 99 and 106).

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Shillo (US PGPUB US2003/0110263) in view of Naik et al (US PGPUB

US2004/0205206) in view of Huntington et al (US PGPUB US2003/0131098) as applied

to claim 1 above, and further in view of Honmura et al (US PGPUB US2003/0236790).

Claim 19 discloses a management server according to claim 1, further

comprising a storage pool management program, wherein said storage pool

management program has at least an unassigned block list and information on a

number of unassigned blocks and, when at least said number of unassigned blocks

exceeds a size of area assignment requested by said area assignment instruction

received from said one of said plurality of servers, determines that the requested area

assignment is possible and executes area assignment processing including separating

unassigned area of said size from the unassigned block list. Shillo in view of Naik et al

in view of Huntington et al teaches the limitations of claim 1 as recited above. It fails to

teach of said program has at least an unassigned block list and information on a

number of unassigned blocks and, when at least said number of unassigned blocks

exceeds a size of area assignment requested by said area assignment instruction

received from said one of said plurality of servers, determines that the requested area

assignment is possible and executes area assignment processing including separating

unassigned area of said size from the unassigned block list. Honmura et al teaches

judging based on current information if the requested capacity is available and if the

area is available the area is assigned to a device (paragraphs 59, 63, and 64).

Shillo in view of Naik et al in view of Huntington et al and Honmura et al are analogous art because they are both related to managing network storage.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the judging and assigning features in Honmura et al with the system in Shillo in view of Naik et al in view of Huntington et al because a storage service is provided which can easily set the capacity of a client (Honmura, paragraph 17).

Claim 20 discloses a management server according to claim 19, wherein said storage pool management program further comprises storage pool assignment information, said storage pool assignment information including information on a number of unused blocks for each virtual storage area and a server from the plurality of servers to which the virtual storage area is assigned, wherein when a total number of said number of unassigned blocks and said number of unused blocks exceeds said size of area assignment requested by said area assignment instruction received from said one of said plurality of servers, said storage pool management program determines that the requested area assignment is possible and executes area return processing including issuing an area return instruction to a server to which a virtual storage area having said number of unused blocks has been assigned. Honmura et al further teaches judging based on current information if the requested area is available and if the area is available a server is notified (paragraphs 59, 63, and 65).

Response to Arguments

Applicant's arguments filed June 8, 2007 have been fully considered but they are

not persuasive.

Applicant asserts the prior art fails to teach or suggest a management server

releases at least part of storage areas in which the low-priority data is stored, of the

assignment areas of other servers as unassigned areas and assigns at least areas

areas to one of said plurality of servers. The Examiner respectfully disagrees,

Huntington et al teaches if free space is needed for a request for storage sections with

low priority data may be recycled (figure 5, paragraphs 62, 63, and 69). Huntington et al

further teaches multiple servers may be connected with multiple recording machines

over a network (paragraphs 33 and 34).

Applicant asserts the prior art fails to teach or suggest releasing at least part of

storage areas in which low-priority data is stored of the assignment areas of other

servers as unassigned areas and assigns at least areas to one of the servers where a

total size of the unassigned areas, the unused areas and storage areas having stored

low-priority data exceeds the size of the storage areas specified by said assignment

function. The Examiner respectfully disagrees, Huntington et al teaches if the

requested free space is not available sections with low priority may be recycled for use

by the request (figure 5, paragraphs 62, 63, and 69).

In response to applicant's argument that there is no suggestion to combine the

references, the examiner recognizes that obviousness can only be established by

combining or modifying the teachings of the prior art to produce the claimed invention

where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Huntington teaches at the time of the invention it would have been obvious to a person of ordinary skill in the art to use the combination of Shillo in view of Naik et al and Huntington et al because large numbers of packets may be communicated and stored on a network with minimal user intervention (Huntington, paragraph 5).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Gillis whose telephone number is 571-272-7952. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on 571-272-3880. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brian J Gillis
Examiner
Art Unit 2141

BJG
7/5/2007

JASON CARDONE
SUPERVISORY PATENT EXAMINER